

No. 746,651.

PATENTED DEC. 8, 1903.

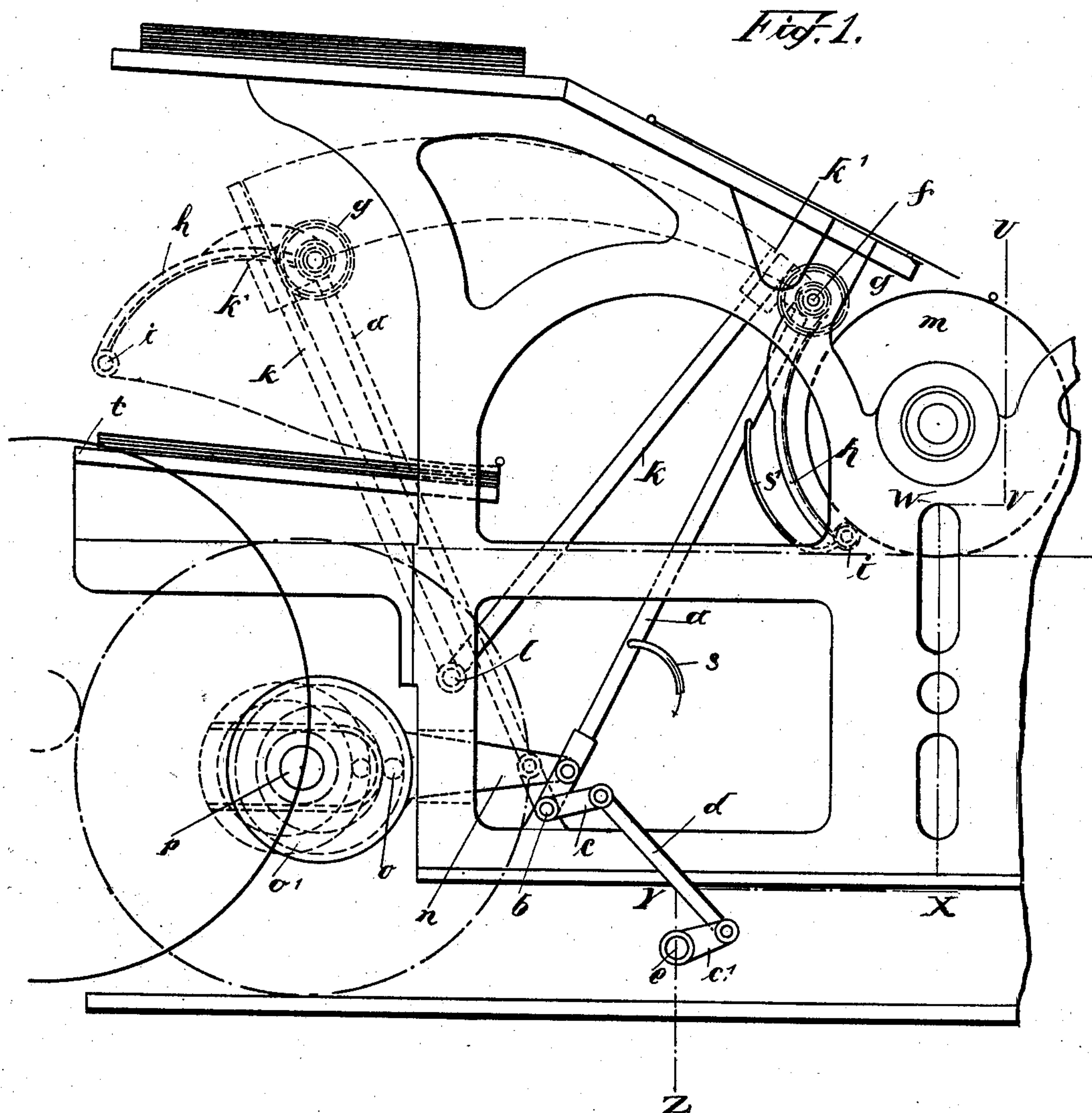
W. M. ROCKSTROH.

PNEUMATIC LAYING-OFF APPARATUS FOR CYLINDER PRINTING MACHINES.

APPLICATION FILED APR. 16, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

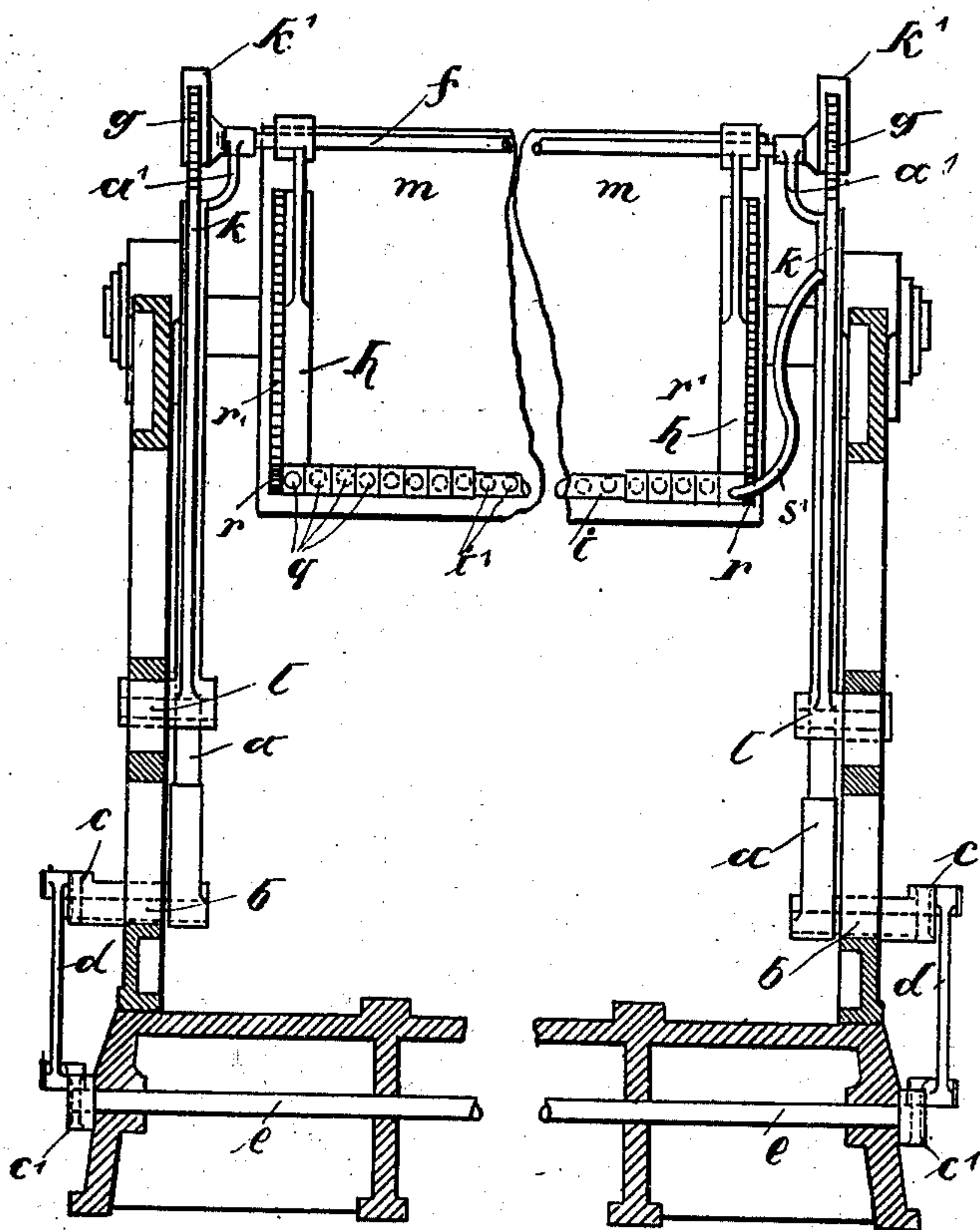


Fig. 3.

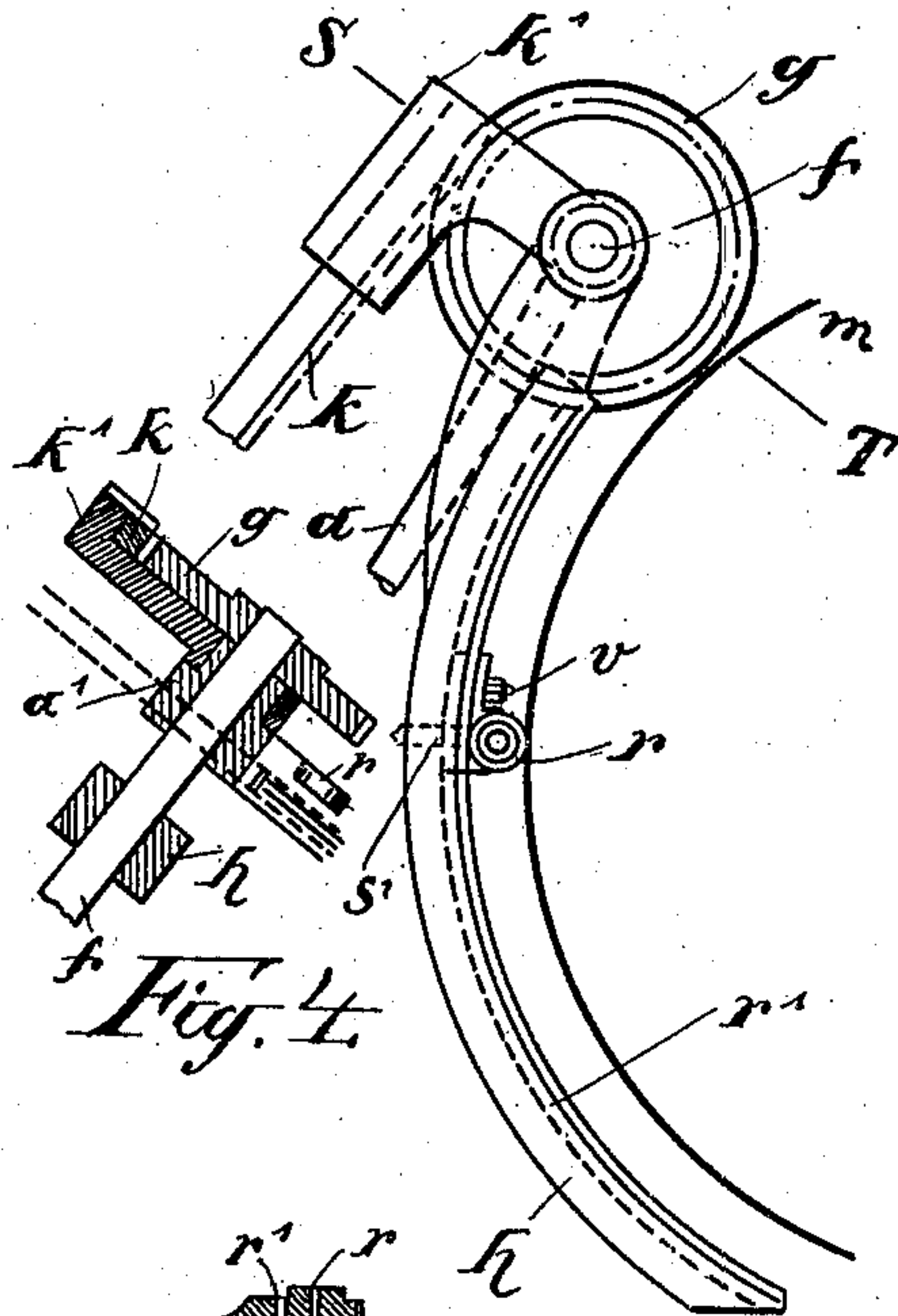


Fig. 4.

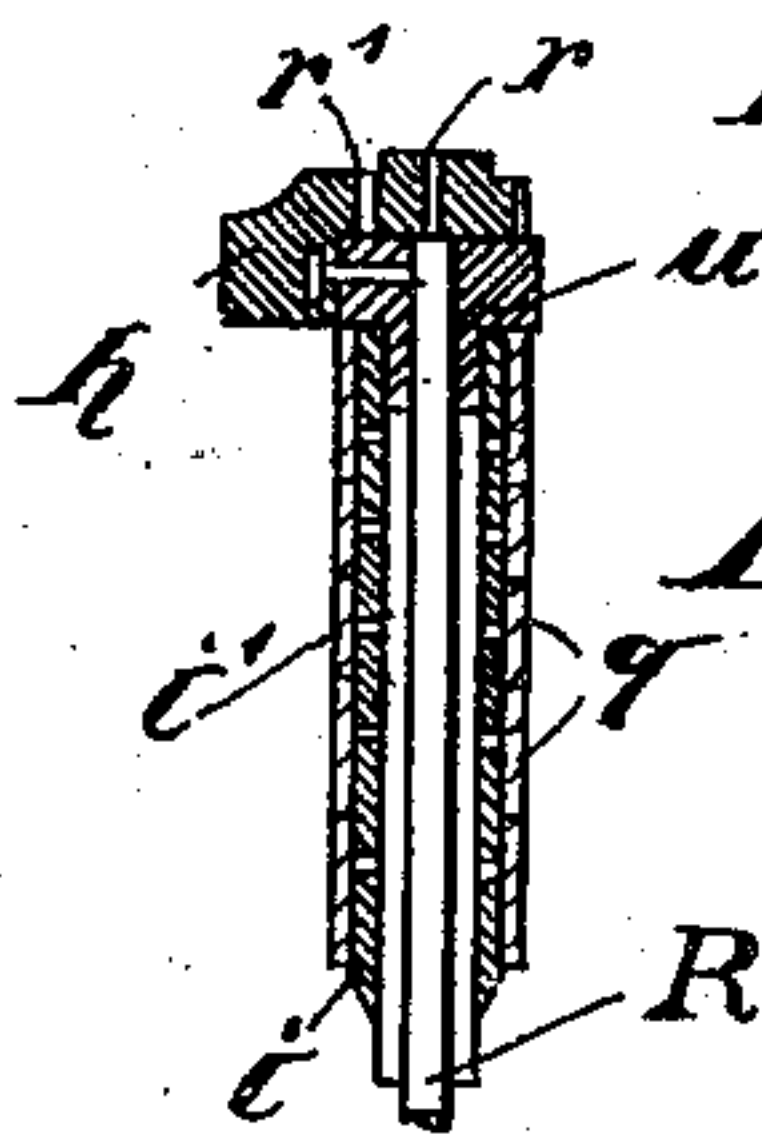


Fig. 5.

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PNEUMATIC LAYING-OFF APPARATUS FOR CYLINDER PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 746,651, dated December 8, 1903.

Application filed April 16, 1902. Serial No. 103,216. (No model.)

To all whom it may concern:

Be it known that I, WILHELM MAX ROCKSTROH, factory manager, a subject of the Emperor of Germany, residing at Klein Sedlitz, near Pirna a. E., in the German Empire, have invented certain new and useful Improvements in Pneumatic Laying-Off Apparatus for Cylinder Printing-Machines, of which the following is a complete specification.

The invention relates to improvements in laying-off apparatus for cylinder printing-machines in which the paper sheets are secured on the cylinder by grippers during the printing operation and transferred to the laying-off table while the cylinder is at rest, the printed paper sheet being seized by a perforated cross-pipe under the action of air sucked through the perforations of said cross-pipe, the latter being adjustable to the length required of the paper sheets; and the objects of the invention are, first, to provide special means for adjusting the pneumatic cross-pipe not only to the length, but also to the width of the paper sheets to be printed, and, second, to so arrange the laying-off apparatus as to enable the laying-off table to be placed directly beneath the laying-on table and above the carriage traveling under same, so that the length of the printing-machine is considerably reduced as in comparison to machines of the other known constructions.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a part of a cylinder printing-machine with the new laying-off apparatus. Fig. 2 is a transversal cross-section of the machine on the broken line U V W X Y Z in Fig. 1. Fig. 3 is a side elevation of a part of the laying-off apparatus on an enlarged scale. Fig. 4 is a sectional view of same on the line S T in Fig. 3, and Fig. 5 is a longitudinal section of a part of the pneumatic cross-pipe on an enlarged scale.

The new laying-off apparatus essentially consists of a frame mounted to rock with the axles *b b* in suitable bearings provided in the machine side frames. The said frame is composed of two tubular side parts *a a*, arranged at each machine side and provided at the free ends with bent pieces *a' a'*, wherein a shaft *f* (see Figs. 1 and 2) is mounted to turn. At

either end of the shaft *f* a gear-wheel *g* is affixed, and at a certain distance therefrom a laying-off lever *h* is affixed on the shaft *f*. The laying-off levers *h h* are preferably bent and provided with longitudinal recesses of a T-section, wherein the heads of bolts *v* engage for adjusting the bearings *u* of the axles of the pneumatic cross-pipe *i*, according to the length of the paper sheets to be printed. To facilitate this adjustment of the pneumatic cross-pipe *i*, there is a shaft *R* arranged within the pipe *i*, on whose ends are pinions *r*, which engage with segmental racks *r'*, provided on the sides of the levers *h*. The adjustment of the pipe *i* on the toothed segment *r'* is effected by turning the pinions *r* on the shaft *R* by the aid of a square key. Thereby the pneumatic cross-pipe is always kept parallel to the printing-cylinder *m* while being shifted in either direction. In Figs. 1 and 2 the pneumatic cross-pipe is shown as secured to the ends of the laying-off levers *h h*, while in Fig. 3 it is shown about in the middle on the laying-off levers. The gear-wheels *g g* engage in the two straight racks *k k*, which are mounted on the machine side frames at *l* to turn, while their toothed ends slide in suitable guides *k' k'*, which are pivotally connected with the shaft *f*. As the axes *b* and *l* of the tubular side parts *a a* and the racks *k k*, respectively, are at a certain distance from each other and on different heights, it will be understood on an inspection of Fig. 1 that during the movement of the laying-off frame from the position indicated by the full lines to the position indicated by the dotted lines the shaft *f* will change its relative position with regard to the toothed ends of the racks *k k*. The consequence of this is that during the said movement of the laying-off frame the shaft *f*, with the laying-off levers *h h*, will be revolved by the gear-wheels *g g* engaging in the racks *k k*, so that the laying-off levers *h h*, with the pneumatic cross-pipe *i*, will be swung and occupy the position above the laying-off table *t*, (indicated by the dotted lines.)

It is immaterial for the present invention in what manner the laying-off frame should be actuated. In the drawings it is assumed that the one side part *a* of the laying-off frame pivotally connected with a forked

lever *n*, which by means of a pin and roller *o* engages the groove of a cam-disk *o'*. The latter is keyed on the principal shaft *p* of the machine.

5 The pneumatic cross-pipe *i* is employed for taking off the printed paper sheet from the cylinder *m*. It is provided with a series of suction-apertures *i'*, arranged at short equal distances from each other. The pneumatic
10 pipe *i* is surrounded with a plurality of rings *q*, the number of which equals that of the suction-apertures *i'*. The rings are arranged to turn on the pipe *i* and are held in their adjusted position by the frictional contact
15 with the pipe *i*. Each ring *q* is provided with an aperture, which by suitably turning the ring may be made to register with the corresponding suction-aperture *i'* of the pipe *i*—*i. e.*, to open it or to cover same. When
20 the rings *q* are so adjusted that their apertures correspond with the apertures of the pipe *i*, then said rings must be turned either to the left or right to close the apertures of the said pipe *i*. Thus by turning the several
25 rings *q* in one or the other direction the pneumatic pipe *i* may be adjusted to the width of the paper sheets to be printed, those suction-apertures *i'* being left open or uncovered which are within the said width, while the
30 other apertures are kept closed or covered. The pneumatic cross-pipe *i* may therefore be adapted to even the smallest width of the paper sheets which it will safely take off the cylinder *m*. The pneumatic pipe *i* is in a
35 known manner connected with the one side part *a* of the laying-off frame by a yielding india-rubber hose *s'*, and the side part *a* itself is connected by a yielding hose *s* with an air-suction pump. (Not shown in the
40 drawings.)

The new laying-off apparatus operates in the following manner: After the adjustment of the pneumatic cross-pipe *i*, in accordance with the length and the width of the paper
45 sheets to be printed, the machine is put into operation. On the completion of each printing operation and during the time in which the cylinder *m* is at rest the lower edge of the paper sheet is sucked by the pneumatic cross-
50 pipe, the air-suction pump acting at this moment. To insure the edge of the paper sheet being properly sucked by the pneumatic pipe, the groove of the cam-disk *o'*, which in the present instance is assumed to be employed,
55 may be so shaped as to cause the pneumatic pipe *i* to bear for a short time against the

edge of the paper sheet and to suck it. Thereupon the laying-off frame is moved toward the laying-off table *t*, while the edge of the paper sheet is taken off the cylinder *m* and
60 carried forward by the pneumatic pipe *i*, then dropped, the printed side of the paper sheet being turned upward. During the swinging movement of the laying-off levers *h h* the paper sheet is first lifted up and then, so to
65 speak, rolled off the cylinder *m* without sliding on the surface of the latter, about as a gear-wheel is rolled on another gear-wheel. As the paper sheet is very quickly layed off it waves above the carriage toward the lay-
70 ing-off table *t* and is then dropped, the air-suction pump ceasing at this moment to suck. A simple and known device (not shown in the drawings) may be employed for placing each
75 paper sheet in the exact position above the pile. The paper sheets may be prevented from touching the types on the carriage by a special protector placed above the traveling carriage.

In opposition to known constructions of the
80 laying-off device where the path of this device crosses with that of the device laying the paper sheet on the cylinder the path of the new laying-off device does not cross that of the laying-on device at all, and so loss of time
85 is avoided, since during the rest of the cylinder not only the printed sheet is taken off, but also a fresh sheet is layed on. It is obvious that in consequence of this the speed of the printing-machine may be considerably
90 increased without any disadvantage to the machine.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed,
95 I declare that what I claim is—

A pneumatic laying-off apparatus for cylinder-presses comprising oscillating levers, a suction-pipe carried thereby and provided with apertures, and a series of rings adjust-
100 ably mounted on the pipe and provided with apertures adapted to register with the apertures of the suction-pipe, a shaft passing through the pipe, pinions on said shaft and segmental racks carried by the arms and with
105 which racks the said pinions engage.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILHELM MAX ROCKSTROH.

Witnesses:

HERNANDO DE SOTO,
PAUL ARRAS.